IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A method of processing a received signal, comprising the steps of:

detecting within said received signal a plurality of possible symbols ($d_k(i)$) transmitted by or for a plurality K of users, each of the plurality of possible symbols belonging to a modulation constellation and being the subject of a spectral spreading by ~~means of~~ a spreading sequence, said ~~method~~ step of detecting comprising:

filtering said received signal, said~~a~~ filtering step ~~(310_1, ..., 310_K)~~ adapted for supplying a complex vector ~~($y(i)$, $\tilde{y}(i)$)~~ characteristic of said received signal, ~~wherein~~ and including decomposing said complex vector ~~is decomposed~~ into a ~~first~~real vector ~~($y^R(i)$, $\tilde{y}^R(i)$)~~ and ~~a second~~an imaginary vector ~~($y^I(i)$, $\tilde{y}^I(i)$);~~

searching separately for ~~and in that~~ at least ~~the~~ a closest neighbors of the ~~first~~real vector and a closest neighbor of the imaginary vector ~~second vectors are sought (330, 331)~~ within a respective real and imaginary lattice of points (Λ,Ω) ~~generated by~~corresponding to said modulation ~~constellations~~constellation~~,~~; and

estimating the transmitted symbols ~~being estimated from the~~ from components of said closest neighbors of the real vector and the closest neighbor of the imaginary vector so as to produce a vector of estimated symbols.

Claim 2 (Currently Amended): The ~~detection~~ method according to Claim 1, wherein the spreading ~~sequences~~ sequence ($s_k(t)$) consist of real multiples ($s_k^0(t)$) of ~~the same~~a corresponding complex coefficient (σ).

Claim 3 (Currently Amended): The ~~detection~~ method according to Claim 1, wherein ~~the search is~~ the step of searching is limited to a first set of points in the real lattice belonging to a first predetermined zone (Σ_R) around the ~~first~~real vector and a second set of points in the imaginary lattice belonging to a second predetermined zone (Σ_I) around the ~~second~~imaginary vector.

Claim 4 (Currently Amended): The ~~detection~~ method according to Claim 1, wherein ~~the search~~ the step of searching is limited to a first set of points in the real lattice belonging to a first predetermined zone (Σ_R) around the origin and a second set of points in the imaginary lattice belonging to a second predetermined zone (Σ_I) around the origin.

Claim 5 (Currently Amended): The ~~detection~~ method according to Claim 3, wherein said first and second predetermined zones (Σ_R and Σ_I) are spheres of probability.

Claim 6 (Currently Amended): The ~~detection~~ method according to Claim 1, wherein the step of searching ~~the search for the~~ closest neighbor of the ~~first~~real vector ~~is effected on~~includes searching a plurality of components thereof, the searching of the plurality of components being limited for each of said components to an interval defined for a lower bound and an upper bound, said upper and lower bounds being chosen so that said interval ~~does not comprise~~excludes points relating to symbols which mathematically cannot belong to the modulation constellation.

Claim 7 (Currently Amended): The ~~detection~~ method according to Claim 1, wherein the ~~search~~ step of searching for the closest neighbor of the ~~second~~imaginary vector ~~is effected on~~ includes searching a plurality of components thereof, the searching a plurality of

components being limited for each of said components to an interval defined for a lower bound and an upper bound, said upper and lower bounds being chosen so that said interval ~~does not comprise~~excludes points relating to symbols which cannot belong to the modulation constellation.

Claim 8 (Currently Amended): The ~~detection~~ method according to Claim 1, wherein, prior to the search for the closest neighbor of the real vector, the ~~first~~real vector ($y^R(i)$) is subjected to a matrix processing (320) ~~aimed at~~ to substantially ~~decorrelating the~~ decorrelate different noise components thereof.

Claim 9 (Currently Amended): The ~~detection~~ method according to Claim 1, wherein, prior to the search for the closest neighbor of the imaginary vector, the ~~second~~imaginary vector ($y^I(i)$) is subjected to a matrix processing (321) ~~aimed at~~ to substantially ~~decorrelating the~~ decorrelate different noise components thereof.

Claim 10 (Currently Amended): The ~~detection~~ method according to Claim 1, wherein said ~~search~~ step of searching includes searching ~~is extended to the search~~ for a first set of points which are ~~the~~ closest ~~neighbors of~~ to said ~~first~~real vector~~, referred to as first neighbors,~~ and searching for a second set of points which are closest to said ~~second~~imaginary vector~~, referred to as second neighbors,~~ and in that the transmitted symbols are estimated ~~flexibly~~ via a soft detection from

symbols ~~generating~~ corresponding to said first and second ~~neighbors~~ sets, and

a first set of distances separating points of said first set from said real vector and a second distance set of distances separating points of said second set from said

imaginary vector. ~~and distances separating said first neighbors from the first vector on the one hand and said second neighbors from said second vector on the other hand.~~

Claim 11 (Currently Amended): The ~~detection~~ method according to Claim 1, wherein ~~the~~ contributions of each user to the ~~signals~~ received signal obtained by the ~~adapted~~ filtering step are determined from the estimated symbols and in that, for a given user k, ~~the~~ contributions of ~~the~~ other users to the received signal corresponding to ~~the~~ transmitted symbols already estimated are eliminated at ~~the~~ an output of the filtering step.

Claim 12 (Currently Amended): The ~~detection~~ method according to Claim 1, wherein ~~the~~ contributions of each user to the received signal are determined ~~(340)~~ from the estimated symbols and in that, for a given user *k*, ~~the~~ contributions of ~~the~~ other users corresponding to ~~the~~ transmitted symbols already estimated are eliminated at the input of the filtering step.

Claim 13 (Currently Amended): The ~~detection~~ method according to Claim 1, wherein, the symbols of said *K* users ~~being~~ are transmitted synchronously, and said lattice of points is of dimension *K*.

Claim 14 (Currently Amended): The ~~detection~~ method according to Claim 11, wherein, the symbols of said *K* users ~~being~~ are transmitted asynchronously and ~~propagating~~ propagated along a plurality of paths, ~~the~~ and a dimension of the lattice is equal to ~~the~~ a number of symbols of the different users which ~~may~~ are mathematically possible interfering symbols~~interfere~~ and are not yet estimated.

Claim 15 (Currently Amended): A communication device ~~for detecting a plurality of symbols ($d_k(i)$) transmitted by or for a plurality K of users, each symbol belonging to a modulation constellation and being the subject of a spectral spreading by a spreading sequence, the device,~~ comprising:

a processor configured to implement the method recited in any one of Claims 1-14.

~~means for implementing the method claimed according to one of the preceding claims.~~

Claim 16 (Currently Amended): A receiver for a DS-CDMA mobile telecommunication system comprising ~~a detection~~ the communication device ~~according to~~recited in Claim 15.